Eric F. Pastor
Pastor, Behling & Wheeler, LLC
2000 S. Mays, Suite 300
Round Rock, TX 78664

Re: Gulfco Marine Maintenance Superfund Site, Freeport, Texas
Unilateral Administrative Order, CERCLA Docket No. 06-05-05
Screening Level Ecological Risk Assessment Comments

Dear Mr. Pastor,

The Gulfco Marine Maintenance Respondents submitted a Screening Level Ecological Risk Assessment (SLERA), dated August 26, 2005, to the Environmental Protection Agency (EPA). Please find enclosed the review comments on this SLERA. The comments reflect the reviews conducted by the Texas Commission on Environmental Quality (TCEQ), EPA, and the Natural Resource Trustees, including the National Oceanic and Atmospheric Administration (NOAA), the Texas General Land Office, the U.S. Fish and Wildlife Service, and the Texas Parks and Wildlife Service.

If you have any questions, please contact me at (214) 665-8318, or send an e-mail message to miller.garyg@epa.gov.

Sincerely yours,

Gary Miller
Remediation Project Manager

cc: Susan Roddy
Ludmila Voskov (TCEQ)
Jessica White (NOAA)

bcc: Pam Travis (6RC-S)
Barbara Nann (6RC-S)

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Gulfco Marine Maintenance Superfund Site
Screening Level Ecological Risk Assessment (SLERA)

General Comments

1. The SLERA screens out a number of chemicals as chemicals of potential ecological concern (COPECs). It is premature to screen out any COPECs without enough samples to adequately characterize the nature and extent of contamination. A thorough delineation of contamination in all media at the site shall be completed before COPECs can be eliminated from the SLERA. For example, this SLERA admits there is not enough information about these media (groundwater and surface water) to determine whether they may affect ecological receptors, but does not include groundwater or surface water sampling recommendations in its conclusions and does not plan to evaluate risk to receptors from these pathways. Groundwater data is available; however, the SLERA declines to discuss the data, stating only that the data will be discussed in the RI/FS Work Plan for the site. This pathway and the other ecological pathways need to be clarified before eliminating them from consideration. The potential for groundwater surface expression (aerial or subaqueous), noted within the report as relevant to the ecological perspective, remains plausible given the field-observed tidal connection to Oyster Creek and the Intracoastal Waterway. All potential contaminant transport mechanisms, including groundwater migration to surface water and sediment, shall be thoroughly evaluated to determine if a complete pathway exists prior to elimination from the SLERA.

2. The SLERA screens out a number of COPECs based on data from the Screening Site Inspection Report (SSI). Screening out COPECs based on data from the SSI is not appropriate. The SLERA assumes the (SSI) data is “of adequate quantity and quality for the purposes of preparing the SLERA,” but in fact the use of this data is contrary to the purpose of an SSI in the HRS process. The lack of SSI data suitability is exemplified by the SLERA’s acknowledgment that "some of the detection limits, especially for the PAHs, were higher than available [screening] levels." Consequently the use of SSI data does not support the Purpose and Scope's intent of providing a "conservative assessment". The TCEQ and EPA use the SSI as a screening mechanism to determine whether a site should be placed on the NPL. The HRS and SSI are not risk assessment documents. Initial studies such as an SSI, which are used in the preparation of the HRS documentation, are not as detailed in scope as an RI/FS delineation of nature and extent of contamination. They are used as screening tools to identify those sites that represent the highest priority for further investigation and possible cleanup under the Superfund program. Their purpose is not to fully characterize the source and the extent of the contamination at a site or to define site risks to human health and the environment. This is accomplished during the RI/FS. The SLERA shall not screen out any chemicals based on initial studies such as the SSI.

3. Screening out COPECs based on background locations not approved for ecological and human health risk assessment purposes is inappropriate. According to EPA policy (2001), "comparison with background levels generally cannot be used to remove contaminants of concern owing to the need to fully characterize site risk."

4. The SLERA screens out a number of COPECs based on the lack of a screening level. Eliminating a COPEC simply because there is no EPA or TCEQ screening level is not appropriate. The SLERA repeatedly eliminated COPECs from all media simply because of a lack of screening level. EPA Superfund Guidance (1997) states that "a contaminant should not be eliminated from the list of contaminants to be investigated only because toxicity information is lacking." The preparers of the risk assessment shall seek out other sources of alternative screening levels, and if one cannot be found in peer reviewed literature, it should be fully documented in the SLERA and the resulting implications discussed in the uncertainty analysis.

5. The SLERA includes specific area use factors that are less than 100% for ecological receptors. It clearly states in the EPA Guidance (1997) that "for the screening level exposure estimate, assume that the home range of one or more animals is entirely within the contaminated area, and thus the animals are exposed 100 percent of the time….species and site specific home range information would be needed later…also evaluate the possibility that some species might actually focus their activities in contaminated areas of the site…" The SLERA shall be revised to provide for a 100 percent area use factor.

Specific Comments

1. *(Page 2, Section 1.1: Purpose and Scope):* The SLERA incorrectly states "Since the TNRCC data were of adequate quantity and quality to list the Site on the National Priorities List, these data are assumed to be of adequate quantity and quality for the purpose of preparing the SLERA." See the General Comments above. This statement shall be deleted from the SLERA.

2. *(Page 4, Section 2.1: Environmental Setting):* The SLERA states "Based on field observations, the area north of Marlin Avenue is tidally connected to Oyster Creek and the Intracoastal Waterway through a natural swale (draining northeast) and storm water ditches north of the Marlin Avenue roadbed" and "The portion of the site north of Marlin Avenue, excluding the capped impoundments and access roads, is considered estuarine wetland." This suggests a potential groundwater-to-surface water nexus and as such is a potential contaminant pathway. Groundwater migration to surface water and sediment shall be thoroughly evaluated. See the General Comments above.

3. *(Page 6, Section 2.1: Environmental Setting):* The SLERA states that "because the area south of Marlin Avenue does not provide consistent, quality ecological habitat given its

industrial use, soil data from this area were not evaluated for ecological impacts." It is unclear whether surface water, groundwater, or other data from this area are going to be evaluated for an ecological impact. An aerial photo of the south site shows almost half the area is not covered by buildings and concrete. Visits to the site by USFWS personnel confirmed use of the site by birds and other wildlife. In addition, surface water runoff from potentially contaminated areas south of Marlin Avenue will enter the Intracoastal Waterway. Therefore, the site area south of Marlin Avenue shall be retained for further ecological evaluation.

4. *(Page 7, Section 2.2.1: Soil):*

a) The SLERA states that two soil samples (and one duplicate) collected from two different locations away from the site represent background conditions. Two samples are inadequate to establish background conditions. The statements in the SLERA regarding comparisons of site sample results to background concentrations shall be deleted.

b) The SLERA states that the TCEQ protective concentration level (PCL) from their Ecological Risk Guidance was used (TNRCC, 2001). This guidance provides screening-level benchmarks, not PCLs. The SLERA shall be revised to remove inappropriate references to PCLs.

c) The SLERA considers background concentrations in screening out chemicals (also reference page 10 of the SLERA). Based on EPA policy (2001), screening-out chemicals from the SLERA based on a comparison to background is inappropriate. The SLERA shall not screen out any soil samples based on background.

d) The SLERA states that metals detected in most soil had no apparent differences between background and site samples. This statement is incorrect since all of the samples identified in Table 1 exceeded background concentrations for one or more metals. This statement shall be deleted from the SLERA.

e) Butanone and methylene chloride were eliminated from consideration because of low soil concentrations and because they are common laboratory contaminants (also reference page 10 of the SLERA). According to the *HRS Documentation Record* (TNRCC, 2003), the soil samples considered were composite samples collected from 0" to 6". Compositing samples typically drives off volatile organic compounds (VOCs) and the resulting analysis may not be representative of the actual soil concentrations. Further, shallow soils typically have reduced VOC concentrations compared to deeper soils since the chemicals tend to evaporate from shallow soils to a greater extent. There may be VOC exposures to burrowing receptors in the deeper soils. Therefore, the VOC concentrations reported from previous samples are not reliable for use in the SLERA. Next, regarding the "common laboratory contaminants", they were not noted in the blanks. If these chemicals resulted from laboratory contamination, their presence would be expected in the blanks as well. The SLERA shall be revised to retain the VOCs.

5. *(Page 8, Section 2.2.2: Sediment):*

a) The SLERA uses three off-site sediment samples (and one duplicate) to establish background conditions. Three samples are inadequate to establish background conditions. The five other off-site sediment samples were not discussed, even though they were collected to establish off-site conditions. The rational used to select background locations shall be provided.

b) Based on EPA policy (2001), screening-out chemicals from the SLERA based on a comparison to background is inappropriate. The SLERA shall not screen out any soil samples based on background.

c) The SLERA states that, with regard to metals concentrations, there was little apparent difference between on-site sediment samples and those collected off-site or considered background. From Table 4, the on-site maximum barium concentration of 506 mg/kg was more than double the maximum offsite/background barium concentration of 235 mg/kg. Also, the on-site maximum lead concentration of 46.8 mg/kg was three times the maximum offsite/background lead concentration of 15.6 mg/kg. Also, the on-site maximum zinc concentration of 314 mg/kg was more than five times the maximum offsite/background zinc concentration of 58.8 mg/kg. The above statement is misleading and shall be deleted from the SLERA.

d) The SLERA evaluated polyaromatic hydrocarbons (PAHs) as individual chemicals compared to their screening levels. The sediment screening levels for PAHs are provided for individual PAH compounds, low molecular weight PAHs, high molecular weight PAHs, and total PAHs. PAHs shall be compared to all three types of benchmarks (individual, molecular weight, and total) where available. Individual PAHs shall not be eliminated solely because their concentrations are below their respective individual screening levels. A PAH shall not be screened out unless all three benchmarks are met, where available.

e) The SLERA states "It should be noted that the quantitation limits for many of the samples were higher than the screening criteria for many of the samples although J flagged (i.e., estimated) concentrations below the quantitation limits were reported by the laboratory and used in this evaluation." The SLERA shall not screen out any chemicals based on initial studies such as the SSI.

6. *(Page 9, Section 2.2.3: Surface Water and Groundwater):* It is stated in the second sentence that no VOCs were measured in excess of the detection limit. The SLERA shall be clarified regarding whether the detection limits were less than the screening ecotoxicity values. It is not acceptable to eliminate evaluation of the surface water pathway based on a limited sampling effort (i.e., 2 surface water samples) with questionable detection limits. The SLERA shall treat these pathways as complete until data from the RI clearly establishes they are not complete.

7. *(Page 9, Section 2.2.3: Surface Water and Groundwater):* Regarding the sufficiency of data concerning whether groundwater discharges to surface water poses an ecological risk, given the insufficiency of the data, this pathway shall not be eliminated in this document.

8. *(Page 9, Section 2.2.3: Surface Water and Groundwater):* The SLERA states that "groundwater generally is not of concern from an ecological perspective unless it discharges to the surface." This statement is misleading since discharge of shallow contaminated groundwater to the surface water and wetlands is a potential pathway at the site. The statement shall be revised to state that groundwater migration to surface water is a concern.

9. *(Page 9, Section 2.2.3: Surface Water and Groundwater):* The SLERA states that "existing groundwater concentrations of VOCs are minimal to non-detect in the southernmost wells." This statement is misleading since the VOC contamination in the northern wells is decidedly not minimal, yet the SLERA does not provide any statements concerning the shallow groundwater contamination in these wells. The SLERA shall be revised to accurately describe the ground water contamination in all areas of the site, including the northern areas.

10. *(Page 10, Section 2.3: Identification of Preliminary COPECs):* The SLERA states "Aluminum, calcium, iron, magnesium, potassium and sodium do not have ecological screening levels and were not evaluated. However, the concentrations reported in on-site soil samples for these metals were similar to background concentrations." This rationale is inadequate. See General Comment 3 above. Elimination based on EPA listing and recognition as an essential nutrient shall be stated, if applied, and done so consistently with EPA guidance. Also see previous comments on using Texas statewide median values for metals as a screening tool and evaluating PAHs as mixtures.

11. *(Page 10, Section 2.3: Identification of Preliminary COPECs):* The SLERA states "Aluminum, barium, beryllium, calcium, cobalt, iron, magnesium, manganese, potassium, sodium and vanadium do not have ecological screening levels for sediment and cannot be evaluated. However, the concentrations detected in sediment near the Site in the Intracoastal Waterway and the ponds are similar to concentrations detected in sediment off-site and in background locations." This rationale is inadequate per General Comment 3 above. If background locations will be used in the RI/FS process to eliminate chemicals, the suitability of any background locations shall be approved by EPA in conjunction with TCEQ and the Trustees and fully described in the SLERA.

12. *(Page 11, Section 2.3: Identification of Preliminary COPECs):* The SLERA states that bioaccumulative compounds present at the site will be carried forward to the Baseline Ecological Risk Assessment (BERA) if the BERA is necessary. The SLERA shall be revised to remove the qualifying statement "if the BERA is necessary ..."

13. *(Page 12, Section 2.4: Potentially Complete Exposure Pathways and Preliminary Conceptual Site Model):* The SLERA states that contaminants from the impoundments could have migrated and possibly continue to migrate with surface water runoff. In addition to surface water runoff, contamination from the impoundments may migrate with ground water flow. The SLERA shall be revised to include ground water migration with the other potential pathways.

14. *(Page 12, Section 2.5: Threatened and Endangered Species):* The SLERA lists the endangered and threatened species in this section. It does not appear from the text that an informal consultation with U.S. Fish and Wildlife Service (USFWS) was done, as is needed. The USFWS shall be consulted with regarding the endangered and threatened species, and the consultation shall be noted in the SLERA.

15. *(Page 13, Section 2.6.1: Assessment and Measurement Endpoints):* The SLERA uses the words "abundance, diversity, and productivity" regarding the various assessment endpoints. The SLERA shall be revised to replace these words with "survival, growth, and reproduction."

16. *(Page 13, Section 2.6.1: Terrestrial Assessment Endpoints):* The SLERA lists the environmental values for the area, but does not include reptiles. Reptilian (and amphibian) abundance, diversity, and productivity shall be identified as values to be preserved.

17. *(Page 13, Section 2.6.1: Terrestrial Assessment Endpoints):* The SLERA shall be clarified regarding the biota included as a base of the food chain receptors.

18. *(Page 15, Section 2.6.3: Measurement Endpoints):* The measurement endpoint discussion in this section of the SLERA shall include mention of comparison of maximum exposure point concentrations in soil and sediment to the TCEQ ecological benchmarks, or to other appropriate screening ecotoxicity values.

19. *(Page 16, Section 3.0: Screening-Level Exposure Analysis):* The SLERA provides home ranges for potential receptors, but does not provide references for these statements. There appears to be several inconsistencies in these home ranges. For example, the home range of a raptor (hawk), which the SLERA gives as 250 acres, should be much greater than that of an omnivorous bird (robin), which was given as 200 acres. Also see Specific Comments 12 through 14 below. The SLERA shall provide references for the specified home ranges listed for all potential receptors.

20. *(Page 16, Section 3.1.1: Terrestrial Receptors):* The SLERA lists the receptors of concern for the area, but does not include reptiles. Reptiles shall be identified as measurement receptors and evaluated, even if only qualitatively.

21. *(Page 17, Section 3.1.1: Terrestrial Receptors):* The reported home range for the American robin is grossly inaccurate. The SLERA reports a home range of approximately 200 acres, while the EPA Wildlife Exposure Factors Handbook lists it as 0.37 - 2 acres. The SLERA shall be revised to use the correct home range.

22. *(Page 18, Section 3.1.2: Estuarine Wetland and Aquatic Receptors):* The SLERA specifies species of benthic invertebrates, but the purpose of this is not clear. Unless these species are to be later used in sediment toxicity tests, the benthos shall be evaluated as a community.

23. *(Page 18, Section 3.1.2: Estuarine Wetland and Aquatic Receptors):* The SLERA proposed the red drum as the first order receptor of concern. Because many of the COPECs (PAHs, PCBs, metals) will partition into the sediments and because its diet consists of a higher percentage of benthic organisms, the black drum shall be used as the representative for this guild instead of the red drum.

24. *(Page 18, Section 3.1.2: Estuarine Wetland and Aquatic Receptors):* The SLERA proposed a very small area use factor (i.e., 1%) for both the red drum and the spotted sea trout. This is rationalized by stating that both species tend to inhabit open bay waters, but move into shallow marshes and grass beds to feed. While this may be true for adults, juveniles will prefer shallow marshes and grass beds to open bay waters. Not only are juvenile fish more likely to be affected by contamination in their diet, but as stated above, they are more likely to remain in the contaminated area longer than adults. The area use factor shall take into consideration the most sensitive life stage present in the area of the site. However, at this point in the process (i.e., SLERA) the area use factor shall be 100% (see General Comment 5 above).

25. *(Page 19, Section 3.1.2: Estuarine Wetland and Aquatic Receptors):* The SLERA proposed willets as the first order avian predator receptor of concern for the next step. Instead, shorebirds (e.g., sandpipers) shall be evaluated as representative receptors. Sandpipers will have a higher sediment ingestion rate as a result of their probing in the sediments. Although it is stated in this SLERA that there is not much shoreline habitat, it is also stated that shorebirds have made homes in the vertical structures on-site, so they are obviously foraging there.

26. *(Page 19, Section 3.1.2: Estuarine Wetland and Aquatic Receptors):* The SLERA proposed the great blue heron as the second order avian predator receptor of concern. A smaller body weight heron, such as a green heron, shall be used instead of the great blue heron. Further, the reported home range for the great blue is grossly inaccurate. The SLERA reports a home range of over 70,000 acres; whereas, the EPA Handbook lists a feeding territory of up to 20.7 acres. The SLERA shall provide references for the specified home ranges listed for all potential receptors.

27. *(Page 21, Section 3.2: Screening-Level Exposure Estimates):* The SLERA states that the coyote and the red-tailed hawk will only have food ingestion, but no soil ingestion. It is inappropriate to assume that there will be no incidental soil ingestion by these receptors. A small amount (e.g., 2%) shall be assumed.

28. *(Page 21, Section 3.2: Screening-Level Exposure Estimates):* The SLERA states that red drum and great blue heron will be exposed to contaminants via prey items. It is inappropriate to assume that drum (red and black) and herons will not be exposed through incidental sediment ingestion. The SLERA shall be revised to include exposure via incidental sediment ingestion for these receptors.

29. *(Page 21, Section 3.2: Screening-Level Exposure Estimates):* The SLERA states that the exposure point concentration for soil, sediment, and/or prey items will generally be based on the 95 percent upper confidence limit for the dataset. The SLERA shall be revised so that the initial assessment of the exposure point concentration will be based on the maximum concentration.

30. *(Page 24, Section 5.1: Summary of Risk Evaluation):* The SLERA states that risks associated with all other metals and VOCs are likely to be minimal since they were measured at concentrations below screening criteria and/or measured at concentrations that were similar to background concentrations." As discussed above (General Comments 1 and 2), the available data is insufficient to make these claims. Also, the soil background data is insufficient to make any determinations regarding comparisons to background (Specific Comment 4-a). In addition, this statement ignores the contaminated shallow groundwater in the northern areas that may migrate, or have migrated, to the adjacent wetlands. The statement about minimal risks associated with other metals and VOCs shall be deleted.

31. *(Page 24, Section 5.1, and Page 25, Section 5.3)*: These sections of the SLERA shall be clarified that contaminants were not eliminated based on comparisons with background concentration.

32. *(Page 26, Section 5.4: Scientific Management Decision Point):* The SLERA states that additional sample data are not necessary for a number of compounds. As discussed in previous comments, the SLERA prematurely screened out chemicals. A thorough delineation of contamination in all media at the site shall be completed before COPECs can be eliminated from the SLERA.

33. *(Table 4: Summary of Metals Concentrations in Sediment Samples):* The screening level for lead in sediments is shown as 47 mg/kg in Table 4 of the SLERA. According to the Table 3-3 in the TCEQ Guidance for Conducting Ecological Risk Assessments, the actual screening level for lead is 46.7 mg/kg for a marine environment. The screening value for lead in Table 4 shall be revised to the correct number of 46.7 mg/kg.